



Characterization of *HSP70* and its expression in tissue: correlation with physiological and immune indices in goose (*Anser cygnoides*) serum

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ABSTRACT. We cloned the goose heat shock protein 70 gene (*HSP70*), to determine its sequence variation and elucidate its mRNA expression. We designed primers to amplify the entire goose *HSP70* sequence. We used 10 commercial Wuzong goslings in a heat-stress experiment. We collected tissue samples for RNA extraction and quantitative real-time polymerase chain reaction (qRT-PCR). We analyzed the variation in expression of goose *HSP70* before and after heat stress. We constructed a DNA pool from six different species, for single nucleotide polymorphism (SNP) screening. We detected 18 SNPs and selected three of these SNPs for correlation analysis with biological and immune traits in 200 Wuzong geese. We showed that T+237C was significantly correlated with the serum corticosterone level, whereas T+1122C was significantly correlated with the heterophil to

lymphocyte ratio. Goose *HSP70* contained no introns. The results of qRT-PCR analysis revealed significant gender differences in the expression of goose *HSP70* at 40°C but not at 25°C; moreover, in general, expression was significantly higher at 40°C than at 25°C. With the exception of the leg muscle and cerebellum, *HSP70* expression was significantly higher in male geese than in female geese. Our results indicate that goose *HSP70* plays an important role in response to severe heat stress.

Key words: Goose; *HSP70* gene; Polymorphism; Heat stress